

5

MAJOR ENVIRONMENTAL PROBLEMS



This is a 10 days lesson
(periods including home work)

After completing this lesson,
you will be able to:

- Define an Environmental Problem.
- Identify the causes for various Environmental Problems.
- Describe the impact of various Environmental Problems on life.
- Describe the nature and causes of Global Warming and evaluate its impact on life.
- Describe the Greenhouse Effect.
- Recommend solutions to avoid Environmental Pollution.



Reading

Wherever we live, our immediate natural or physical surrounding is our environment. It comprised of atmosphere (the gaseous portion), lithosphere (the solid portion), hydrosphere (the water portion) and people, plants and animals all live in a balance. This is our environment which affects us and is being affected by us since ages.

The Industrial Revolution began in 19th century with rapid industrial development in Europe and other parts of the world. This was followed by rapid growth of population. Its concentration in towns and cities led to development of industries, modernization of communication and transportation. Thus began a rapid use of earth resources.



Environmental Problem

All living beings are using the resources of the earth. In doing so; in most cases they change or add something into the environment. Addition or change in the environment both by man and by nature, can cause direct or indirect danger to the life of humans, animals and plants. In other words, any addition of stuff by any means into the air, water, soil, food and to our immediate surroundings that threatens or harms the health and survival of living organisms, is known as an environmental problem.

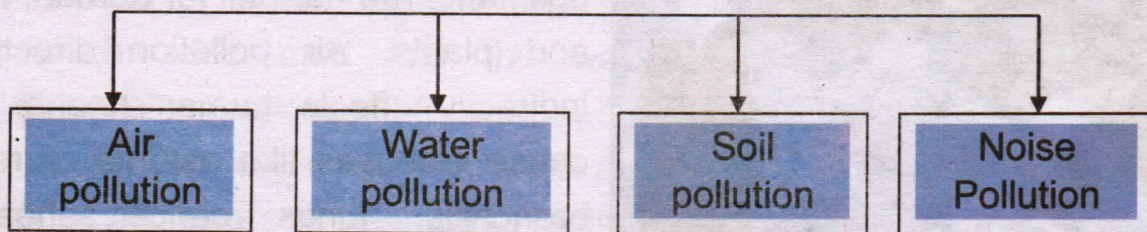
There are two major sets of environmental problems:

1. Pollution
2. Global Warming

5.1 POLLUTION

Pollution refers to all unhealthy changes that are occurring in our environment, and have a direct negative effect on life. Addition of anything which brings change in the quality of water, air, soil or food and threatens the health, survival or activities of man or other living organisms is called pollution. In other words impurity caused by human activities in the water, air, soil or food which directly or indirectly damage activities, health and survival of all living organisms is called pollution.

Following are the major types of pollutions and we shall study each separately:



i. Air Pollution

Definition: Due to human and natural actions air becomes un-clean, dirty, smoky and unhealthy for human breathing, having some unpleasant smell. It is called air pollution.

Air pollution is one of the most widespread forms of pollution in the world especially in developing countries like Pakistan. In Pakistan, air pollution as an



environmental problem, is present in cities like Karachi, Lahore, Faisalabad, Multan and Islamabad.

Causes: Air pollution can be caused by natural and human activities. In nature, during volcanic eruption, ash and various gases mix with the air. Similarly the forest fire is also responsible for the air pollution. Dust, soil particles and smoke are added in atmosphere and pollute the air.



Fig.5.1: Smoke Rising from a Brick Kiln

Today, transportation and industries are major human sources of air pollution. Automobiles like, trucks, buses, cars, motorcycles, trains, ships and brick kilns (Fig.5.1) release significant quantities of CO_2 and other harmful gases. Due to population growth more vehicles are used and smoke is released which ultimately become part of the city's environment. Similarly coal and petroleum products are also used in thermal electric power plants and industries which emit harmful gases in the air and pollute it (Fig.5.2).



Fig.5.2: Smoke from a Factory Chimney

Impacts: There are many harmful effects of air pollution in our atmosphere. Air pollutants are harmful for human, animals and plants. Air pollution directly and indirectly affects human health. It can cause diseases like asthma, sore eyes, bronchitis, lungs cancer, headache, dizziness, and cough. Air pollution also reduces visibility which could be

dangerous during driving. Similarly cigarette smoking pollutes the air and affects people's health.

Solutions/Measures: The following measures can be taken to reduce the impacts of air pollution;

- Factories should be constructed far away from the residential areas.



- Better use public transport and cycle for travelling.
- Planting more trees can be helpful to reduce air pollution. Trees bring balance by producing Oxygen and consuming Carbon dioxide.
- We should save fossil fuel energy resources to reduce air pollution.
- Environmental awareness campaigns should be launched.

ii. Water Pollution

Definition: Water pollution appears when there is a change in the physical, chemical or biological properties of water. This in turn brings change in the quality of water that makes it poisonous.

Causes: The major causes of water pollution are industries (Fig.5.3) and population increase. Almost all the industries use water in one way or the other during their production. Thus water disposed of by the industry is polluted water. Similarly sewage (waste water from drains, toilets, washing machines and showers) is also a major source of water pollution.

Other causes of water pollution are: (i) Soil erosion which adds mud into the water.(ii) Landslides are also responsible for water pollution in nearby river or lake.(iii). Pipes, sewers or ditches from factories or sewerage treatment plants discharge their waste in fresh water streams, lakes or rivers. (iv).Ground water pollution is due to irrigation, industrial waste. (v). Leakage of gasoline and septic tanks. (vi). Industrial waste also add poison to underground water table which pollutes drinking water.

Impacts: Water pollution causes many harmful diseases. Many people drinking impure drinking

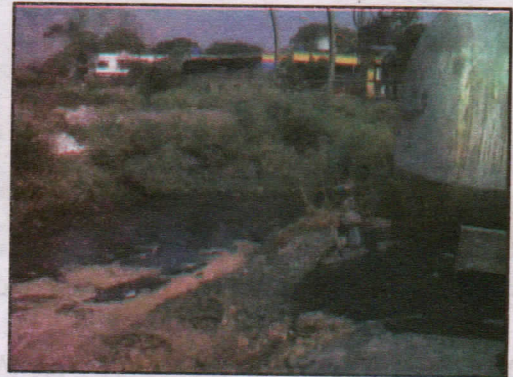


Fig.5.3: Chemical are Added into Water



Fig.5.4: Polluted Water

The Indus River Dolphin is one of the world's rarest types of dolphin found in rivers. Its existence is in danger. The river water is getting polluted day by day. Government of Pakistan and WWF (Wild world Fund) staff is struggling to save this rare mammal.



water get diseases like cholera, diarrhoea and gastro-intestinal diseases, intestinal diseases. Pakistan is one of those developing countries where most of the population does not have clean drinking water. In industrial areas toxic water is



Fig.5.5: A dead Indus River Dolphin



Fig.5.6: A Seagull in Oil Polluted water

released into nearby streams, wells, rivers, lakes and oceans. It kills aquatic life, fish, crabs and the Indus dolphin (Fig.5.5) etc.

Crops, vegetables, fruits and plants irrigated by these polluted streams or rivers become poisonous for human health. Polluted water creates gastro-intestinal disorder and skin problems. Addition of oil in an ocean immediately kills aquatic organisms. Oil floating at ocean surface coats the feathers of birds and fur of mammals. It ultimately kills them (Fig.5.6)

Solutions/Measures: Water pollution can be reduced in following ways;

- No factory be allowed to discharge its waste water into the streams/canal, rivers or in to the sea without treatment.
- There should be lesser use of pesticides and fertilizers on crops. This will reduce the runoff pollutant material into nearby water sources.
- Water should be conserved by turning off the tap when not required. This helps to reduce water shortages and minimize the amount of contaminated water that needs treatment.
- We should not throw litter into rivers, lakes or oceans. It is always good to throw the litter into bins.



iii. Soil Pollution

Definition: Any of the liquid, solid or gaseous material, which changes the quality of soil, its composition or appearance that affects plants, crops and micro-organisms is called soil pollution.

Causes: Soil pollution occurs when chemicals, both in solid or liquid forms are released from industries. In many cases the factories produce harmful chemicals as by products. This is thrown or dumped in nearby areas. Slowly it is added into the underlying soils. Agriculture chemicals, fertilizers and pesticides remain in the soil by seeping for many years. Any use of that defective soil can be dangerous for human beings.

Impacts: A number of soil pollutants entering into surface water, ground water and air, ultimately harms the human being in a number of ways (Fig.5.7).

The main soil pollutants are: salts, petroleum products, heavy metals, agricultural fertilizers, spray etc. There are other sources of soil pollution too. For example, spilling and leakage of underground storage tanks of harmful chemicals. Salinity also makes soil unfit for growing crops. With decrease in agriculture produce; humanity will suffer.

Solutions/Measures:

- There should be system of proper disposal of waste. One must not throw the litter on ground which ultimately pollutes the soil.
- Dumps of waste material should be far away from residential areas.
- There should be less use of pesticides and insecticides in agricultural activities.
- Environmental awareness campaigns make people, especially the farmers aware of harmful effects of soil pollution from harmful effects of soil pollution and chemicals thrown by factories.

iv. Noise Pollution

Definition: When any sound becomes loud, irritating to ears and harmful for functions and structure of ears, it is called noise pollution. The sound is one of the signs of life. When it becomes louder, it results in physical or mental harm to human



beings. There is a particular limit of sound, which is naturally bearable. When sound is too loud, it becomes noise and ultimately noise pollution.



Fig.5.7: Residences near an Airport Experience Noise Pollution.

Causes: All kind of vehicles like motorbikes, trains, trucks, rickshaws, buses are sources of noise pollution on the roads and for people living in nearby areas. People living near airports also face noise from flying jet planes (Fig.5.8). Similarly residents living near a railway track are also victim of noise pollution. At home, televisions and music system are responsible for noise pollution when the volume of sound is kept high.

Impacts: Noise pollution is actually a slow poisoning for human nerves. It has long lasting psychological impacts on human behaviour in the form of irritation, aggressive mood, anger and discomfort of sleep. It leads to deafness, hypertension, headache, increased heartbeat, nerves stress and tension.

Solutions/Measures:

- Proper noise silencers should be used in vehicles.
- There should be less use of horns especially near the residential areas.
- Industries, airports and major bus terminals should be constructed far away from the residential areas.
- Schools, colleges and university areas should be in silence zone.

5.2 GREEN HOUSE EFFECT

Atmosphere contains gases like carbon dioxide, methane, nitrous oxide and water vapour. They are termed as greenhouse gases. These greenhouse gases are transparent to some of the radiation from the sun to the earth but they block some radiations which are reflected from the Earth and retain them in the atmosphere by absorbing or diverting them. This absorption of radiation makes the



atmosphere warm. The process is termed as greenhouse effect. If greenhouse gases do not retain heat in the atmosphere, the earth would be a very cold planet. (fig.5.8).



Fig.5.8: The process of Green House Effect

5.3 GLOBAL WARMING

The term “Global Warming” refers to an increase in average global atmospheric temperature.

i. Nature and Causes of Global Warming

Global warming, that is an increase in normal atmospheric temperature is mainly caused by the increase in the amounts of greenhouse gases in the atmosphere. Human activities like forest cutting and burning of fossil fuels i.e Petroleum, Natural gas and Coal are responsible for their addition in the atmosphere.

Increase in greenhouse gases slows the natural heat outflow into the space, by retaining more amount of outgoing radiation than normal, causing increase of the atmospheric temperature. Global atmospheric temperature thus continues to rise from the normal, leading to global warming. Global warming has caused an increase of 0.8 degree Celsius in normal temperature during the last century.



Impacts of Global Warming: The Greenhouse effect has a number of impact son all of us. Some of these are noted below.

- The average temperature of the earth's surface will increase between 3°C to 5°C in a couple of decades, if the addition of greenhouse gases continues at the present rate.
- Ice will melt from the Antarctica as well as from valley glaciers of Himalayas, Karakorum and Hindu Kush mountains. It will increase the global sea level up to 20 cm by the year 2030. Due to increase in temperature more evaporation will take place and we are likely to have more rainfall in many parts of the world.
- Likewise many areas of the world will also experience less or even no rain at all. Thus cultivation of crops will be reduced.
- The plants and animals are more likely to be the victims of global warming. Due to rise in mean temperature on the earth's surface, some species (plants and animals) may get benefit and some might be at loss.
- Due to change in temperature many cropping areas will shift northward or southward in order to follow their needed temperatures.
- Some diseases/epidemics will spread among human population groups. Malaria and Dengue fever carried by mosquitoes may cause massive loss of human lives in new areas.

5.4 HOW TO AVOID ENVIRONMENTAL PROBLEMS?

All types of pollution and related issues are found around us. As an individual and a community; we can avoid or minimize the harmful impacts of environmental problems. For this, people should be educated about the types and forms of environmental problems through education and mass media campaign. Environment friendly and energy efficient vehicles should be used. Use bicycles and public transport must be promoted instead of personal cars to move within a city. Instead of using fossil fuels as energy resource, we should use other sources like solar, wind and hydroelectric power.



People should be encouraged to adopt the slogan "Drive less and Walk more". Tree should be planted where ever open/vacant land is available in order to reduce pollution. Also grow tress as noise barriers/sound shields along heavily travelled highways. One should always use filtered and properly boiled water for drinking. Drivers should restrict the use of pressure horns on busy city streets, sirens and other noisy devices to reduce noise pollution. People who do not follow or adopt the necessary measures should be fined or given punishment through legal ways.

**Exercise**

Q. 1. Write long answers of the following questions in detail:-

- What do you mean by an Environmental Problem?
- Highlight various causes of Environmental problems?
- Describe the causes of Global Warming and evaluate its impact on life.

Q. 2. Write short answers of the following questions:-

- What is air pollution?
- Write a short note on water pollution.
- How noise pollution affects our life, Explain briefly.

Q. 3. Select the appropriate option among the following:-

- The major cause of air pollution is
 - Burning of fuel
 - Planting trees
 - Winds
 - Rainfall
- Asthma can be caused due to
 - Air pollution
 - Water pollution
 - Noise pollution
 - Soil Pollution
- The major cause of global warming is
 - increase in CO₂
 - increase in Oxygen
 - increase in Nitrogen
 - increase in humidity



iv. The major cause of soil pollution is

- A. Salts
B. Ice
C. Seeds
D. Fertilizers

Q. 4. Fill in the blanks with proper words.

- i). Carbon dioxide is a ----- gas.
ii). Human activities are largely responsible for ----- effect.
iii). The amount of ----- in increasing in the atmosphere
iv). Pollution in Indus River is responsible for the deaths of -----.
v). Noise pollution can cause -----.

Q. 5. Make the following statements as True or False:-

- i. Greenhouse gases trap the heat in the atmosphere. (True/False)
ii. The pesticides create air pollution. (True/False)
iii. The greenhouse gases are water vapour, carbon dioxide, and dust particles. (True/False)
iv. The industries release chemical materials into the air. (True/False)

Q. 6. Match the following columns:-

A	B
Heating up the atmosphere	Greenhouse gas
Indus dolphin	Soil pollution
Soil salinity	Global warming
Pesticides	Noise pollution
Musical function	Water pollution



Activities

- i. In order to reduce pollution in your street/village, convince people of that area by telling them the harmful effects of pollution.
ii. Make a presentation of the most important types of pollution problems found in Pakistan and present before your classmates.



Glossary

AWARENESS

Having knowledge; informed of current developments

ENVIRONMENT

External conditions or surroundings: especially those in which people live or work; plants and animals live

GREENHOUSE EFFECT

Position or effect in which atmosphere near the surface of the Earth holds heat

SALINITY

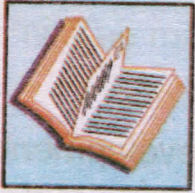
Presence of salt in the water (harmful to cultivation)

TOXIC

Poisonous: harmful



- Students should be taken to a nearby area badly affected by any type of pollution i.e.; Air, Water, Noise and Soil and explain that problem to students and ask them to suggest remedy.
- Arrange a lecture in your school by a local doctor about the harmful effects of water pollution as an environmental problem.



6

NATURAL REGIONS



This is a 10 days lesson
(periods including home work)

After completing this lesson,
you will be able to:

- Identify a Region as a Spatial Entity,
- Identify the Major Regions of the World in term of Climate,
- Describe selected Natural Regions in terms of Climatic Controls and the impact on human activities,
- Describe the importance of selected Natural Regions in terms of Climate and Human Activities,
- Name some countries from each Natural Region.



Reading

6.1 CONCEPT OF A REGION

A Region is an area of the Earth's surface, with one or more common features or characteristics that give it an identity. It is therefore different from other areas. Thus making Regions is in fact an attempt to separate areas of one kind from areas of another kind.

Location and Extent: Since Regions belong to the Earth, all Regions have a **Location**. This location is often mentioned in the Region's name. Northern, Central, Tropical, Polar etc are common indications of location.

Place names like *Northern Areas* of Pakistan, *North Karachi*, *Upper Swat*, *Bala Hissar*, *Unduroon-e- Shehar* (اندرون شہر) etc all give us **location** and identity of a place.

All regions have an Extent, or 'spread' over the surface of the Earth. That is, each region covers particular area of the Earth's surface. It may be large or small.

All type of regions are formed on the basis of a common feature or quality.

Important features are physical, climatic or economic.



In short, all regions have a location, extent, and a distinct feature that make it 'different' from other regions. Study on the basis of Regions makes matter simple and easy to understand.

Some Important Basis of Classification

There are several basis of forming regions. Important among these are Climatic Regions, Agricultural Regions, Industrial Regions, Densely Populated Regions and so on. It is the 'base', which comes out as the distinct feature of a Region. One can thus know the similar or different areas of the world.

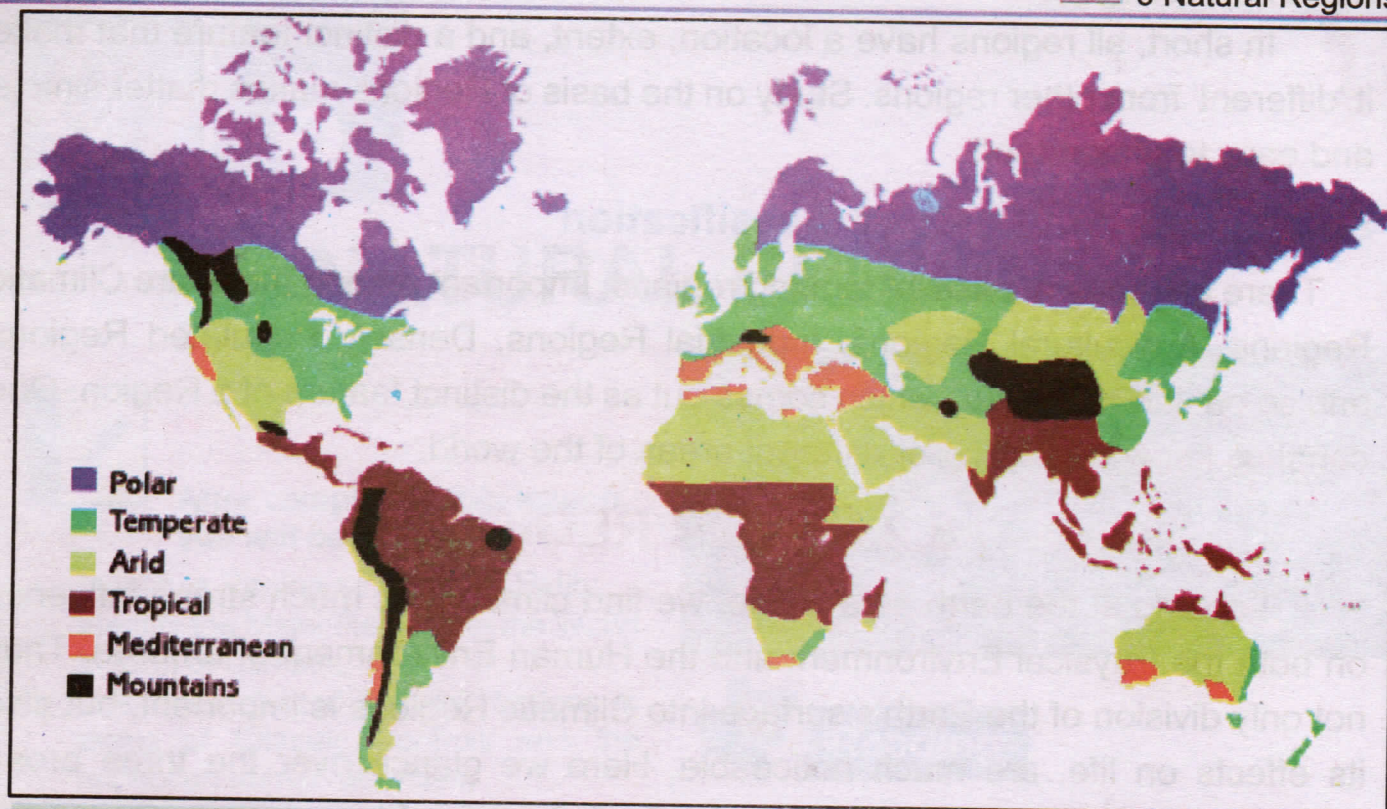
6.2 MAJOR REGIONS

Looking at the earth as a whole, we find climate has much strong influence on both the Physical Environment and the Human Environment of an area. Thus not only division of the Earth's surface into Climatic Regions is important, but also its effects on life, are much noticeable. Here we glance over the three broad Regions that are formed distinctly under the influence of temperature around the surface of the Earth. (Map 1.1). These are termed as

1. Tropical,
2. Temperate,
3. Cold or Polar.

1. **Tropical:** The lands between 30° North and 30° South are hot with little difference in temperatures during the year. It includes much part of our country below Multan; the Arab countries and North Africa.
2. **Temperate:** The lands between 30° N to 60° N and 30° S to 60° S have moderate temperatures. These vary between cool and warm, during winter and summer months. Greater part of USA, many European countries, much of China and Japan enjoy temperate climates.
3. **Cold:** Areas of the world beyond 60° N and 60° S experience very cold temperatures all year round. Much of Canada, Greenland, northern parts of Russia and the continent of Antarctica are very cold parts of the world.

Due to different temperature conditions the climate varies in different parts of the world. Temperature variations lead to different types of climate; vegetation cover, food, occupations and other ways of living in different lands.



Map 6.1: Broad Climatic Regions

6.3 NATURAL REGIONS

In study of Natural Regions we look at very large areas that have similar physical environments and economic activities. Natural Regions are the broad segments of the Earth's surface where in, a set of physical environments is not only prominent, but its influence on life is much obvious. Our interest here lies mostly in human habitations. Some habitats on the Earth's surface are productive and inviting. As compared to these, other lands are unproductive and forbidding

Division of Natural Regions is made on the basis of Climate; more importantly Temperature and Rainfall. The vegetation cover (scientific name Flora), animal Life (Fauna) and major human activities (economic as well as cultural activities) of each region, clearly reflect influence of the climate in that area. rainfall and temperature of an area give us some 12-14 major Natural Regions on the Earth's surface.

Natural Region is a large part of the land were geographic features—more importantly, Climate and Natural Vegetation—have shaped the life and economic activities of the people differently from other areas of the World.



A study of 6 important Natural Regions enables us to fully understand the concept of a Region.

(i) Tropical Rainforest Region

The Tropical Rainforest Region includes lands in (1) the Amazon Basin (mostly Brazil) in South America, (2) the Congo (Zaire) Basin and portions of Uganda and Kenya in Africa, and (3) Islands of Sumatra, Java (Indonesia), southern parts of Malaysia and the tiny country of Singapore in Asia.

Climate: Tropical Rainforest Region, situated along the Equator, has unique features. The Sun rises and sets here almost at the same time, round the year. So, it always gets a 12-hours day and 12-hours night, and there is little concept of seasons.

(a) Temperature: Temperature is always high round the year. It is almost 27°C during the day. However the temperature falls by about 5° during the night. The high temperature increases the capacity of the air to absorb more water vapour. As such, it is always much humid which gives a feeling of much uneasiness.

(b) Rainfall: Rainfall is heavy in the Tropical Rainforest Region. It is almost 1200 mm or more in a year. The heavy rainfall is due to intense heat that causes great evaporation. It happens almost daily, all the year round.

Natural Vegetation: Natural Vegetation grows in thick layers. Firstly there is a dense growth of high rising Evergreen Trees. These trees rise between 50 meters to 60 meters or even higher. Below, there is a variety of climbing trees called the 'Lianas'. Nearer to the ground are still other plants, in plenty, with much broad leaves. The interlacing of branches and leaves make the forests naturally closed for entry.

Animal Life in the Tropical Rainforest Region is confined to the trees and water (rivers and swamps). There is a great variety of insects and colourful birds,



Fig. 6.1: The Thick Rainforest



reptiles and monkeys which live on leaves, branches and trunks of the trees.

Impact on Human Activities

Human activities in the Tropical Rainforest Region have remained restricted because of thick forest growth, poisonous animals and excessive heat and moisture. However during the past one-century or so, man has made efforts to make use of the available resources through much hard labour.

Generally small patches of land are cleared for agriculture by cutting and burning of trees. It is difficult to grow cereal crops, for more than a few years, as the fields are soon covered by natural growth of wild varieties.

Now Plantation Agriculture has been introduced especially in Malaysia and Indonesia. Large areas have been cleared for plantation of selected variety of Rubber trees, Coconut and Sugar cane. Past 50 years or so have brought fruits of independence especially for Malaysia, Indonesia and the small state of Singapore. Both Kuala Lumpur (Capital of Malaysia) and Singapore City have developed Light Industries. Both have taken advantage of their location by sea, and made much economic progress.

(ii) Monsoon Region

The Monsoon Region primarily covers Pakistan, India, Bangladesh, Myanmar and parts of Vietnam and China in Asia. Some parts of Central America, Brazil, eastern coast of Africa and North-East coast of Australia also fall in the Monsoon Region.

Climate: In summer months (May-June) the great landmass of South Asia gets up heated and the resultant low pressure attracts moist-cloudy winds from the sea.

(a) Temperature: There is much variation in temperatures over different parts of the Monsoon Regions. In the month of May day temperature is 30°C (somewhat moderate) in Mumbai, and 45°C (much hot) in Jacobabad. In January Mumbai temperature is 25°C whereas Multan has as low as 10°C .

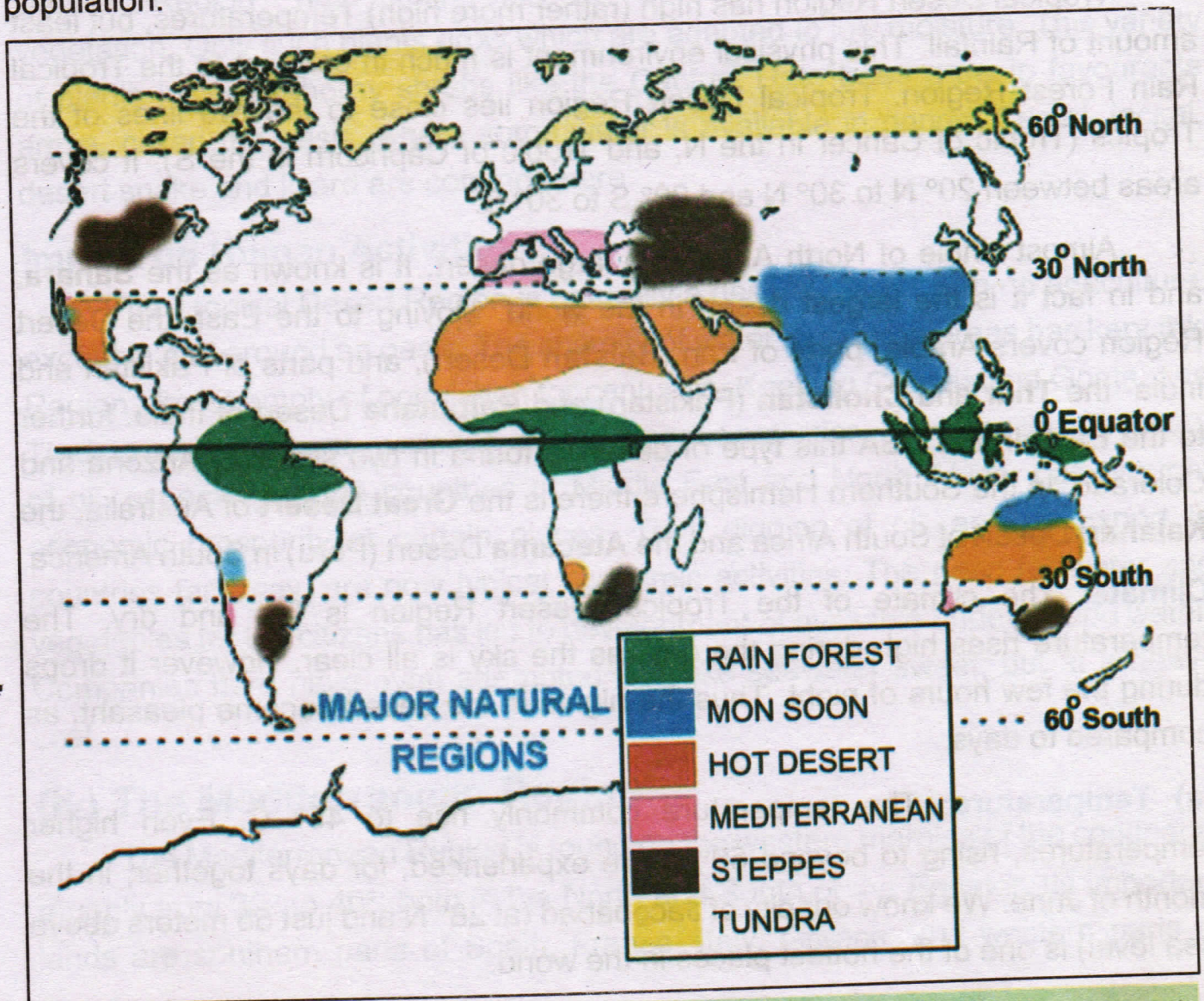
(b) Rainfall: Monsoon Region is known for heavy rains, just following the heated months of May and June. The amount of rainfall is much heavy along the mountain slopes. It also varies from East to West. The eastern lands where the Monsoon



6 Natural Regions

winds reach early get much heavy rains. Here Cherrapunji gets over 10,000 mm (425+ inches) of rain in three months. Murree on the western side gets around 1,000 (40 inches) over the same period.

Natural Vegetation and Animals: In the Monsoon Region Natural Vegetation varies from thick trees to tall bamboos in the areas of heavy rains. Teak, Sal and Sandal are important trees here. However trees that shed leaves in winter months are found in areas that experience low temperature. Smaller bushes grow in areas of less rain. Several species of the cat family—including the tiger, cheetah, snow leopard, and jungle cat, live in some areas of the Monsoon Region. These wild animals are however under threat of extinction because of growing human population.



Map 6.2: Major Natural Regions



Impact on Human Activities

Most parts of the Monsoon Region support intense agriculture. Almost over half of the eastern parts of the Sub-continent, Rice is grown in plenty to support a dense population. In northern parts of India Wheat replaces Rice as a staple food. Sugarcane and Cotton are cultivated in plenty. Further to the west, in Pakistan where rainfall is comparatively much less (around 500 mm) cultivation of Wheat, Rice, Cotton and Sugarcane is carried with the support of irrigation waters. Many orchards specialize in the production of Citruses, Mangoes, Bananas and Coconuts.

(iii) Tropical Desert Region

Tropical Desert Region has high (rather more high) Temperatures, but least amount of Rainfall. This physical environment is much in contrast to the Tropical Rain Forest Region. Tropical Desert Region lies close to the two lines of the Tropics (Tropic of Cancer in the N, and Tropic of Capricorn in the S). It covers areas between 20° N to 30° N and 20° S to 30° S.

Almost whole of North Africa is a large desert. It is known as the **Sahara**, and in fact it is the largest desert in the world. Moving to the East, the Desert Region covers Arabia, parts of Iran (**Seistan** Desert), and parts of Pakistan and India--the **Thar** and **Cholistan** (Pakistan) and **Rajputana** Desert of India. further to the East. In the USA this type of desert is found in two states of Arizona and Colorado. In the Southern Hemisphere there is the **Great Desert** of Australia, the **Kalahari** Desert of South Africa and the **Atecama** Desert (Peru) in South America.

Climate: The climate of the Tropical Desert Region is hot and dry. The temperature rises high during the day, as the sky is all clear. However it drops during the few hours of night. Thus the nights in the desert become pleasant, as compared to days.

(a) Temperature: The temperature commonly rise to 45° C. Even higher temperatures, rising to beyond 50° C are experienced, for days together, in the month of June. We know our city of Jacobabad (at 28° N and just 55 meters above sea level) is one of the hottest places in the world.



(b) Rainfall: In most of the areas the yearly average rainfall is less than 200 mm. In fact, at many places, couple of years passes with no rainfall at all. We experience many years without rain in the Thar area of Pakistan. Rainfall for Jacobabad is 177 mm and for Timbuktu is 230 mm.

Natural Vegetation and Animals:

As there is little Rain, the Desert Region has very little vegetation. Only such plants grow which are adapted to low moisture. This variety of plants includes thorny shrubs like the Cactus. Date trees grow in favourable areas, called the oasis, where some water is available in ponds. Camel, jackal, desert snake and lizard are common here.



Fig 6.2: An Oasis in the Desert

Impact on Human Activities

The Tropical Desert Region is naturally a desolate place with no agriculture, except in and around an oasis. The scarcity of water over large areas has kept this Region almost empty of population for centuries. Keeping Camels and Goats, and Trading across deserts, were the main economic activities. However the discovery of oil, especially in the countries of Middle East and North Africa, has brought economic prosperity at certain places. Thus digging of oil, and its Export to countries far away, are now typical economic activities. The need for water and vegetables for the citizens has led to development of available underground water. Companies here have even attempted to make seawater sweet; but at a heavy cost.

(iv) The Mediterranean Region

The Mediterranean Region is found on the western margins of the continents roughly from 30° to 40°, both in the North and South of the Equator. Its important lands are southern parts of Spain, France, Italy, Greece, and western parts of



Turkey and the Northern coast of Africa. In North America it includes the Central Valley of California (USA).

Climate: The typical climate of the Mediterranean Region is made up of (1) Mild Winters with Rains and (2) Warm Summers with no Rains.

(a) Temperature: The Temperature during cold months, on the average is 10°C ; where as in the hot months it rises up to 27°C .

(b) Rainfall: The Rainfall is moderate. It varies from 300 mm to 600 mm in areas of higher relief. Most of the Rain falls in winters. There is no Rain in the Mediterranean Region during summer season.

Natural Vegetation and Animals:

Natural vegetation largely consists of deciduous trees. The important varieties of trees are Oak, Walnuts and Olives. These types of trees have oily leaves that help retain moisture, and repel heat during summers. Among the animals there are many a birds like sparrows, pigeons, parrots and common crows. Cattle are important in the fields. But more importantly Mediterranean Region is known for its goats along the slopes.

Impact on Human Activities

As the climate suits vegetative growth round the year, cultivation of fruits and grains is most important economic activity of the Mediterranean Region. Olives, Grapes and Citrus fruits (Oranges, Lemons and Limes) are grown in abundance.

Mediterranean Lands, especially Greece, Italy and Spain have a long history of human settlements. Rome stood as a center of human civilization in olden times. Venice is known for inland water channels of the sea, which serve as streets. Qurtaba has flourished as a center of learning for 4 centuries. The influence of human occupation is overwhelming in this region.

Other fruits of this Region include Peaches, Figs and Apricots. The dry summer season is suitable for drying of fruits. Thus preservation and trade of fresh and preserved fruits (both in packs and cans) is much important.



(v) The Steppes Region

The Steppes is a grassland region spread in inner cooler parts of the continents. In Eurasia it spreads from Black Sea (Russia) in the West to Mongolia in the East. In N. America it stretches from foothills of the Rocky Mountains to the Great Lakes on two sides of US/Canada borders. Here it is popularly known as the *Prairies*. In South America (Argentina) it is known as *Pampas*.

Climate: Typical climate of the Steppes Region is hot summers and very cold winters. The Steppe region experience much harsh winters due to strong, cold winds from the north.

(a) Temperature: The average winter temperature average is 10°C ; where as in the summer average temperature is around 25°C . Being away from the oceans temperature during coldest months falls to as low as -18°C . On the other hand in summer it may rise as high as 45°C .

(b) Rainfall: The Rainfall is generally low. It ranges from less than 100 mm in the low lands to 300 in the areas of higher relief. Most of the Rain falls in winters. The mountain peaks are snow covered.

Natural Vegetation and Animals:

Natural vegetation largely consists of tall grasses. Some trees grow in scattered areas near the rivers. Nowadays most of the plains especially in the United States, Canada, Ukraine and Russia the lands have been cleared for cultivation of cereals.

Vast lowlands of Steppe are home to thousands of gazelles and migratory birds. These include a variety of cranes and the rare golden eagle. The Steppe, especially Mongolia is however famous as home for wild horses.

Impact on Human Activities

The Steppes are great cereal producing areas. Wheat, oats, barley and maize are extensively cultivated here. In parts of Russian steppes cotton and tobacco are also cultivated. In drier parts unsuitable for crops Cattle are kept for beef. Manufacture of cereal foods and canning of meat are other important activities here.



(vi) The Tundra Region

The Region, we study now, is a typical part of the Earth, popularly known as the Tundra. It lies within the Arctic Circle (above 66.5° N) along the shores of the Arctic Ocean. It includes northern parts of Canada, whole of Greenland, and northern parts of Norway, Finland and Russia. It does not exist in the South, as the Antarctica is all ice and snow. Apart from extreme cold, the Region is known for its great variations in length of daytime and night time. In fact it has continuous daylight during summers and continuous darkness (night) during winters. Thus in the Tundra Region living conditions are extremely tough and taxing on humans as well as animals.

Climate: The climatic conditions of the Tundra Region are very severe with extreme cold.

Temperature: Temperature in the Tundra Region remains below freezing point for over 6 months. Temperature starts rising during June, when duration of days is longer. But it seldom rises to 10° C on the average, during the months of September and October. There after the Temperature returns to below Freezing point by December. Average low temperature drop to -25° C, at many places of the Region.

Rainfall: Precipitation (both Rain and Snow) is small. It is as low as 200 mm.

Natural Vegetation and Animals:

The Tundra Region is blank and bleak, with little vegetation; and that too for a short time during the year. The growing season is too shorts and the land is much frozen. In this Region of short summer, only such simple plants grow that have very few leaves. This variety of plants includes Mosses, Lichens and some grasses. The animals here bear extreme colds and have to walk on snow. These include Reindeers, some species of Dogs with thick hairs, Lemmings and Arctic Foxes.

Impact on Human Activities

Only a few groups of people called Eskimos have adapted to a very harsh environment of Tundra. Hunting of animals and fishing is their main economic



activity. Trained dogs, not only drag their sledges on snow, but also help Eskimos in hunting. There is no cultivation of any crops or fruits.

**Exercise****Q 1. Write detailed answers to the following questions:-**

- i. Describe the 3 major regions of the world in terms of climate.
- ii. Write a brief account of the Mediterranean Region.
- iii. Highlight the relationship between climate and human activities in any three regions studied.

Q2. Write short answers to the following questions:-

- i. Which region receives more rainfall (a) Monsoon or (b) Steppe?
- ii. Name the region which gets rainfall throughout the year.
- iii. Name 5 countries of the monsoon region.
- iv. Which region has heavy vegetation growth?

Q 3. Select the appropriate option among the following:-

- i. The Region known for very little rain.
A. Monsoon B. Mediterranean
C. Tundra D. Desert.
- ii. Which is the coldest region in the world?
A. Mediterranean B. Monsoon
C. Tundra D. Desert
- iii. Which region has an Oasis?
A. Monsoon B. Rainforest
C. Tundra D. Desert
- iv. Which region gets high temperatures and heavy rains round the year?
A. Monsoon B. Rainforest
C. Tundra D. Desert

Q. 4. Fill in the blanks with appropriate words.

- i. All regions have a _____, extent and a distinct feature.



- ii. Climate has strong influence on both Physical Environment and _____ Environment.
- iii. Mediterranean region is found on the _____ margins of the continents.
- iv. Plenty of short grasses but very few trees grow in the _____ region.

Q.5 Mark the following statements as True or False:-

- i. Temperature in Tundra region always remains above 30° C (True/False)
- ii. The sun is never directly overhead in the Temperate region (True/False)
- iii. Heavy rain falls during summer in the Mediterranean region. (True/False)
- iv. Desert region is located near the poles. (True/False)

Q. 6. Match the following related column by drawing a line:-

A	B
Heavy rains in summer months	Rainforest region
Olives, grapes and citrus are grown	Tundra region
Very little or no rainfall in a year	Steppe region
Rain falls all the year round	Monsoon region
Reindeers are a typical animal	Mediterranean region
Short grasses grow in plenty	Desert region



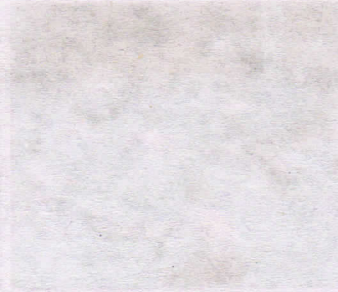
Activities

- i. Draw a map of Rainforest Region showing at least 3 countries.
- ii. Draw a map of the Mediterranean Region and also draw sketches of four different fruits of the region.
- iii. Read an article or book about the Tundra Region. On a chart depict pictures of an Igloo, a sledge driven by dogs and a reindeer.



Glossary

DENSELY	Thickly, tightly, heavily
HABITAT	The natural home of an animal or plant
LIANA	A climbing plant
OASIS	Fertile patch of land in a desert, where water-table reaches ground surface (along with a well or pond)
STEPPE	Extensive grassy plain, usually without trees (In North America such extensive plains are called prairies and in South America as pampas)



- Invite attention to the importance of grouping on the basis of similarity or difference.
- Emphasize role of climate; especially on agriculture and human activities
- Compare natural vegetation and wild animals of Rain Forest, Desert and Tundra Regions; arrange a display of photographs of different regions.